

9.5 Corrosion of metals

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS rusting 生锈 • sacrificial protection 牺牲保护 • electrons 电子 • galvanising 镀锌
• barrier methods 隔离法

Objective

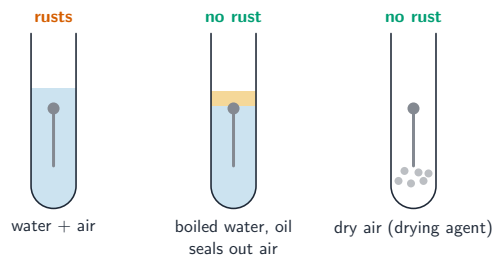
Build the skills to answer exam questions on the **corrosion of metals** 金属腐蚀 — **rusting** 生锈, what it needs, and how to prevent it (including **sacrificial protection** 牺牲保护).

You must be able to:

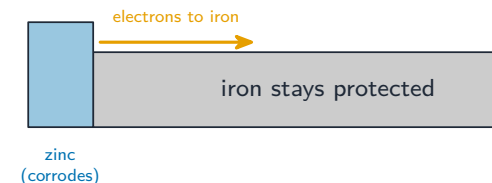
- state that rusting needs oxygen and water
- describe barrier methods and galvanising
- explain sacrificial protection

1 Worked examples

■ Preventing rust



Rusting needs both water and oxygen



The more reactive zinc corrodes instead of the iron — sacrificial protection

- barrier methods:** painting, greasing, plastic coating.

2 Practice

2.1 State the two substances needed for iron to rust. [2]

2.2 Name the process of coating iron with zinc. [1]

3 Exam-style questions

3.1 Rust is: [1]

A	B
C	D

- A iron(II) sulfate
- B hydrated iron(III) oxide
- C iron carbonate
- D zinc oxide

3.2 In an experiment, an iron nail is kept in (i) water and air, (ii) boiled water under oil, and (iii) dry air with a drying agent.

(a) State in which tube the nail rusts, and why. [2]

(b) State the purpose of the boiled water in tube (ii). [1]

3.3 A block of zinc is attached to the steel hull of a ship. Explain how this protects the steel from rusting, even if the surface is scratched. [3]
